

S/129/60/000/011/004/016
E073/E535

AUTHORS: Belenkova, M.M., Kostenko, A.V., Mikheyev, M.N.,
Stoinskaya, E.E., Pogrebetskaya, T.M. and Yurgenson, A.A.,
Engineers.

TITLE: Influence of Heat Treatment and Nitriding on the
Mechanical Properties of Austenitic Steels

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov,
1960, No.11, pp.16-20

TEXT: A nitrided layer of austenitic steel can be ferro-
magnetic, although the core of the component can remain paramagnetic.
By changing the preliminary heat treatment it is possible to obtain
an austenite with various degrees of alloying and various
compositions of the secondary phases. Changes in the phase
composition during preliminary heat treatment of austenitic steel
may bring about changes in its magnetic properties due to formation
of δ -ferrite resulting from quenching at elevated temperatures. For
this reason, the authors considered it of interest to study the
influence of preliminary heat treatment and nitriding on the
mechanical properties of austenitic steel. Two steels of the
following compositions were investigated: (in %)
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Properties of Austenitic Steels

| Steel | C | Si | Mn | Cr | Ni | W | Ti | S | P |
|-----------------------|------|------|------|-------|-------|------|------|-------|-------|
| ЭИ123 (E1123) | 0.18 | 2.27 | 0.65 | 14.54 | 13.80 | 1.79 | 0.84 | 0.007 | 0.016 |
| 1X18H9T (1Kh18N9T) | 0.10 | 0.58 | 0.53 | 17.78 | 8.70 | - | 0.64 | 0.013 | 0.020 |

The magnetic properties were studied after preliminary heat treatment followed by nitriding. The steel 1Kh18N9T was additionally subjected to "wrong" nitriding: tinned specimens were charged into a furnace simultaneously with the nitrided specimens of the same steel. The magnetic properties of the steel E1123 were determined after normalization annealing or after normalization annealing and ageing. The normalization temperature was 1150 and 1070°C. The preliminary heat treatment of the steel 1Kh18N9T consisted in quenching from 1150°C in water and subsequent ageing. Both steels

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were aged for 8 hours at 800°C. The specimens were in the form of 12 mm diameter, 5 mm long cylinders. The magnetic susceptibility of the steels EI123 and 1Kh18N9T in the paramagnetic state was measured by means of magnetic scales at various field strengths so as to determine the $\chi(H)$. For investigating the magnetic properties of the nitrided steels, specimens in the form of tubes with an external diameter of 8 mm, a length of 60 mm and a wall thickness of 0.5 mm were used. The external surfaces of the specimens were ground whilst the internal surfaces were machined by means of a reamer. Prior to nitriding, the specimens were etched in a hydrochloric acid solution at 70°C for 5 min and then nitrided in a laboratory furnace at 600°C, with a holding time of 65 hours for the steel EI123 and 75 to 55 hours for the steel 1Kh18N9T. The 75 hour holding time corresponded to the maximum depth of the nitrided layer for specimens with a wall thickness of 0.5 mm. The magnetic properties of nitrided specimens were measured ballistically in an open magnetic circuit. On the basis of the obtained results, which are given, the following conclusions are arrived at:

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- 1) Changing of the normalization annealing temperature of the steel EI123 from 1070 to 1150°C and additional ageing for 8 hours at 800°C does not bring about a change in the susceptibility of this steel.
- 2) Nitriding changes to a considerable extent the magnetic permeability of the investigated steels; the nitrided layers of both the investigated steels were ferromagnetic and this is due to the formation of nitrides, impoverishment in alloying elements of the austenite and austenite decomposition.
- 3) As a result of nitriding, the magnetic permeability of the steel EI123 increases considerably (by a factor of 3) as compared to the steel 1Kh18N9T. ✓
- 4) Increase in the depth of nitriding brings about an increase of the maximum magnetic permeability; with increasing relative depth of the nitrided layer of the steel EI123 from 23 to 48.5% the maximum permeability increases by more than double. With increasing relative depth of the nitrided layer of the steel 1Kh18N9T from 50 to 93.65%, its maximum permeability increases from 3.7 to 19.8 gauss/Oe.

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5). The results of the described investigations lead to the conclusion that it is possible to monitor the depth of the nitrided layer for a number of austenitic steels by means of an electromagnetic method. There are 1 figure, 5 tables and 5 references: all Soviet.



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KOSTENKO, A.V., inzh.; LOPUKHINA, Ye.V., inzh.; POGREBETSKAYA, T.M.,
inzh.; YURGENSON, A.A., inzh.

Structure of nitrided 15Kh11MF steel after soaking at high
temperatures. Metalloved. 1 term obr. met. no.7:48-52 J1 '60.
(MIRA 13:10)

(Steel, Stainless--Metallography)
(Metals at high temperature)

S/114/61/000/008/004/005
E193/E183

AUTHORS: Zelenskiy, V.N., Engineer, and Kostenko, A.V., Engineer
TITLE: Heat resistant cast irons as materials for components
of power generating plant

PERIODICAL: Energomashinostroyeniye, 1961, No.8, pp. 35-38

TEXT: In the fabrication of some cast components, operating at elevated temperatures under relatively low stresses, cast irons are often used instead of more expensive and difficult to produce alloy steel castings. The object of the present investigation was to carry out a comparative study of two types of cast iron, used at the Ural'skiy turbomotornyy zavod (Ural Turbo-motor Plant) as the materials of supercharger blocks which operate in the atmosphere of exhaust gases at 550-600 °C and which carry relatively high loads. The materials studied were cast iron ЖЧХ 1.5 (ZhChKh 1.5) (containing 2.8-3.4% C, 1.7-2.7% Si, 1.2-1.9% Cr and up to 1.0% Mn, 0.3% Cp and 0.12% S), and cast iron of the "СИЛАЛ" type ("Silal") (containing 2.5% C, 5.45-6.6% Si, 0.62-0.85% Mn, and approximately 0.18% P, 0.018% S, and 0.1% Cr). Tensile and transverse bending tests, carried out at various temperatures between 20 and 650 °C, Card 1/7

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showed that cast iron of the "Silal" type is more temperature-sensitive than cast iron ZhChKh 1.5. The U.T.S. of the former decreases by 60% on heating to 650 °C (from 19.0 to 6.8 kg/mm²), the corresponding decrease in the case of the latter material being only 19% (from 21.7 to 18.4 kg/mm²). The bending strength and ductility (as indicated by elongation and deflection) of both materials increased with rising temperature. In the next series of tests the stability of the structure and properties of the two materials at high temperatures were studied. To this end, the test pieces were held at 600 °C for periods ranging up to 1500 h after which their microstructure was examined and both tensile and transverse bending strength determined. No significant changes in the structure of either alloy were observed. The mechanical properties of cast iron ZhChKh 1.5 were also practically unaffected even after 1500 hours at 600 °C. On the other hand, the U.T.S. of the cast iron of the "Silal" type decreased after the same treatment from the initial 18.6-19.0 to the final value of 11-15.0 kg/mm². Similar differences were revealed by creep tests, the results of which are tabulated. The results of the time-to-rupture tests are given in Table 4. The results of tests carried Card 2/7

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out at 600 °C under a stress of 2 kg/mm² are reproduced in Table 5. It will be seen that the time-to-rupture under a high applied stress was shorter for "Silal" and that the creep rate for this material under a low stress was higher than that of ZhChKh1.5. The resistance of both materials to the action of hot products of combustion of diesel engine fuel was studied side by side with that of steel 20ХМЛ (20KhML). The scale formed on specimens tested at 600 °C was periodically removed by electrolytic dissolution, the loss of weight due to the formation of scale was measured, and from these data the rate of attack was calculated. The results are reproduced in Fig.4. Although in the first stage of the process, when the rate of attack was high for all three materials, the rate of attack on cast iron ZhChKh 1.5 was higher and that of "Silal" lower than the rate of attack on steel 20KhML, this difference became insignificant after prolonged exposure to hot exhaust gases. In every case tenacious and firmly adhering scale was formed. The object of the final series of tests was to study the dimensional changes of the materials studied, caused by simultaneous action of the exhaust gases and high temperatures. The tests (lasting up to 1500 hours) were carried out at 600 °C
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on cylindrical specimens whose length and weight were periodically measured. The length measurements were carried out between the flat faces of the test pieces, a protective paint being used before each test to prevent the formation of scale on these faces. The increase in length of the "Silal" specimen after 1500 hours did not exceed 0.5%, the maximum increase in length of the ZhChKh 1.5 cast irons being 0.2%. The maximum increase in weight during the same period was 0.379% for "Silal" and 0.408% for ZhChKh 1.5. It was concluded that in the fabrication of components of power generating plant, operating at 600-650 °C in the atmosphere of burnt diesel fuels and carrying low loads, the low- and medium-alloy steels can be successfully replaced by cast iron ZhChKh 1.5. There are 5 figures, 6 tables and 1 Soviet reference.

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S/137/62/000/007/070/072
A160/A101

AUTHORS: Zemskov, G. V., Kogan, R. L., Smekh, Ye. V., Zdanovich, V. L.,
Gushchin, L. K., Kostenko, A. V.

TITLE: The problem of hardening steel in an ultrasonic field

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 7, 1962, 109, abstract 71740
("Nauchn. zap. Odessk. politekhn. in-t", 1962, 37, 41 - 44)

TEXT: The investigation of the effect of an ultrasonic field on the process of hardening was carried out with Y 8 (U8) and X 12 Φ (Kh12Φ) steels. For comparison reasons, experiments were made by quenching these steels in water with and without the ultrasonic field. The U8 steel was hardened from 800 - 820°C, the intensity of the ultrasonic field was within 1 - 2 va/cm², and the frequency of the ultrasonic oscillations - 23 kilocycles. The Kh12Φ steel was quenched from 1,130°C in oil or in water with and without the action of the ultrasonic field. The subsequent triple tempering was carried out at 510 - 530°C for 1 hour and the steel cooled in the open air. It was determined that the hardenability and the hardness of the U8 steel increase (Hc increases from 37 - 42 to 54 - 60 in a

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A160/A101

The problem of hardening steel in an ultrasonic field

layer with a depth of 1.5 - 2 mm) when quenching in an oil bath with the use of ultrasound. This applies for samples with a diameter of up to 20 mm. The use of ultrasonic oscillations during the quenching of the Kh12Φ steel from 1,130°C and the cooling in oil with a subsequent triple tempering increases the micro-hardness by 30 kg/mm². There are 6 references.

A. Babayeva

[Abstracter's note: Complete translation]

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S/810/62/000/000/010/013

AUTHORS: Pogrebetskaya, T.M., Yurgenson, A.A., Kostenko, A.V.

TITLE: High-temperature behavior of nitrided steels.

SOURCE: Metallovedeniye i termicheskaya obrabotka; materialy konferentsii po metallovedeniyu i termicheskoy obrabotke, post. v g. Odesse v 1960 g. Moscow, Metallurgizdat, 1962, 245-257.

TEXT: The paper describes an experimental investigation showing that long-term exposure to high temperatures (T) of nitrided steels leads to the following phenomena: (1) Coagulation of the nitrides and dissociation of the less stable Fe nitrides, with attendant reduction in hardness; (2) diffusion in depth of the N, freed as a result of the nitride dissociation and, therefore, a thickening of the nitrided layer affected; (3) interaction with O, which evokes the formation of a surficial oxide layer. The nitride-dissociation T determines the T limits for the use of nitrided steels. Steels containing greater amounts of elements that form stable and finely-dispersed nitrides conserve their hardness and the thickness of the nitrided layer more effectively. Nitrided steels intended for long-term operation at elevated T must retain a sufficiently great surface hardness, be free of nitride networks and, for austenitic steels, have a minimal quantity of α -phase.

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High-temperature behavior of nitrided steels.

S/S10/62/000/000/010/013

Specimens of the steels 15X11MΦ (15Kh11MF) and 15X12BMΦ (15Kh12VMF), which are ordinarily employed for nitrided parts of steam turbines operating at T of 535-570°C, and also steels 1X13 (1Kh13), 3X728 (EI728), and 1X18H9T (1Kh18N9T) were tested. The heat-treatment procedures employed are tabulated. Test T were 535, 560, and 570° for the first two steels and 680° for steel 1Kh18N9T. Maximal holding time: 6,000 hrs. Additional tests were made on the nitrided layer on valve stems made of steel 15Kh11MF, which had been in actual operation for 8,500 hrs. The change in hardness with time is graphed, also the depthwise distribution of the microhardness and the thickness of the nitrided layers as a function of the duration of the holding at the various high T's. The structure and the formation of the surface oxide layer are depicted in photos; they are substantiated by X-ray-diffraction analysis (full-page table). The oxidation process may be regarded as follows: The Cr oxidizes faster than the Fe in the surface layer, forming an oxide (Cr, Fe)₂O₃. Further oxidation is determined by the diffusion of the Fe and possibly the O through the layer of alloyed scale, whereupon a surface-scale layer consisting of Fe₂O₃ forms. The Fe nitrides in the nitrided layer dissociate, the N separated interacts with the Cr, forming Cr nitrides. Simultaneously, a gradual decomposition of the austenite in the nitrided layer proceeds. After 309 hrs there may still remain some γ-phase, but after 4,500 hrs the γ-phase lines on the X-ray graph disappears, and the structure

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High-temperature behavior of nitrided steels.

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consists of (α + CrN) phase, the lines of which become increasingly distinct.
There are 10 figures and 2 tables; no references.

ASSOCIATION: Sverdlovskiy turbomotornyy zavod (Sverdlovsk turbo-engine plant).

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REF ID: A5008592
S/0124/64/018/005/0758/0761

AUTHOR: Rybalko, F. P.; Kostenko, A. V.

34
33
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Effect of single crystal orientation on ductility during cyclic torsion

Fizika metallov i metallovedeniye, v. 18, no. 5, 1964, 758-761

crystal, copper, metal ductility, metal elongation

Abstract: The dependence of elongation on the number of cycles in cyclic torsion was studied with single crystals of copper in the form of solid cylinders.

It was established that under cyclic torsion the single crystals were elongated even in the absence of external tensile stresses. Elongation depends largely on the orientation of the single crystals. With an increase in the number of cycles, elongation in all cases is the same as when an increase in external tensile load is applied on cyclic torsion. The results are interpreted crystallographically.

The ductility of single copper crystals up to rupture by cyclic torsion depends on the number of active slip systems favorably located for elongation on the axis.

The greater the number of crystallographic slip systems, which are activated in deformation by cyclic torsion, the greater the elongation.

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ACCESSION NR: AP5008532

attained at the moment of rupture. In this case rupture occurs after fewer cycles than when the number of slip systems is small.

The macroscopic parameters of oriented hardening (maximum and mean values of accumulation and breakdown of permanent deformation and the value of the latter) must depend on the number of active slip systems, since these parameters are associated with elongation from torsion.

The application of external tensile stresses on cyclic torsion of single crystals of copper increases the ductility up to rupture. This increase grows with the number of cycles. Orig. art. has 1 graph.

ASSOCIATION: Ural'skiy gosuniversitet im. A. M. Gor'kogo (Urala State University)

SUBMITTED: 26Sep63

ENCL: 00

SUB CODE: SS, AS

NO REF SOV: 005

OTHER: 002

JPRS

L 14993-66 EWT(m)/EWP(w)/EWA(d)/EWP(v)/T/EWP(t)/EWP(k)/EWP(z)/EWP(b)/ETC(m)-6

ACC NR: AP5028569

(N)

SOURCE CODE: UR/0126/65/020/005/0788/0790

IJP(c)

MJW/JD/HW/JG/WB/EM/MJW(CL)

AUTHOR: Zemskov, G. V.; Konev, V. N.; Kogan, R. L.; Dombrovskaya, Ye. V.;
Kostenko, A. V.

ORG: Odessa Polytechnic Institute (Odesskiy politekhnicheskiy institut); Ural
gosuniversitet im. A. M. Gor'kiy (Ural'skiy gosuniversitet)

TITLE: Oxidation of nickel alloys in atmospheres containing sulfur

SOURCE: Fizika metallov i metallovedeniye, v. 20, no. 5, 1965, 788-790

TOPIC TAGS: nickel alloy, metal oxidation, metal surface, metal scaling, metallo-
graphic examination, x ray analysis

ABSTRACT: The effect of oxidation of ZhC6-K nickel alloy in sulfur atmospheres was studied. It had been previously observed that in such environments the heat resistance of nickel decreased as a result of the formation of nickel sulfides with low melting points; in addition, these sulfides form eutectics with nickel and its oxides. Chromium is known to retard this sulfide formation but does not prevent it. For the experiments, samples were cut from turbine blades which had operated for

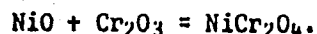
UDC: 669.24 : 620.193.4

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ACC NR: AP5028569

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various periods at temperatures of 800-900°C in an atmosphere containing gaseous sulfur. Metallographic, x-ray and chemical analysis were performed. The scale was removed from the blades and cylindrical powder samples were made for the x-ray study in which $K_{\alpha, \beta}$ Cr radiation was used. The nickel content was determined by the weight method while the sulfur content was established by the iodometric method. A microstructure of the base metal and of the blades in which the surfaces of the blades revealed scale formation is shown. Lowered microhardness was the result of alloying elements diffusing out to the grain boundaries. Chemical analysis of the layer showed a 1% sulfur content. The x-ray analysis of the layer showed it to have a crystal lattice of the NiO type and a phase of the spinel type. The mechanism for the formation of oxide layers in sulfur containing atmospheres was proposed for the alloy ZhC6-K. The spinel phase is formed from the following reaction:



This phase can also alloy with other elements in the metal. Once the full scale forms, internal oxidation occurs. The oxygen diffuses faster along the grain boundaries and forms Cr_2O_3 due to the greater affinity of Cr for oxygen. In the

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ACC NR: AP5028569

center of the grain the Cr content becomes depleted, and the remaining nickel is left to form NiO. The solution of sulfur in the NiO lattice contributes to the increased oxidation of the alloy since the sulfur intensifies the reaction. The scale structure finally becomes that of NiO with sulfur dissolved within and the spinel NiCr_2O_4 . Orig. art. has: 3 figures.

SUB CODE: 11,20/

SUBM DATE: 19Jan65/

ORIG REF: 003/

OTH REF: 002

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L 14573-66 EWT(m)/EWA(d)/EWP(t)/EWP(z)/EWP(b) IJP(c) MJW/JD/HW/WE/MJW(CL)

ACC NR: AP6004167

SOURCE CODE: UR/0114/66/000/001/0034/0035

AUTHOR: Zenskov, G. V. (Candidate of technical sciences; Docent); Kogan, R. L. (Candidate of technical sciences; Docent); Kostenko, A. V. (Engineer); Khmelevskaya, M. Ye. (Engineer)

ORG: none

TITLE: Titanium-silicon and titanium-aluminum coatings of nickel-base alloy

SOURCE: Energomashinostroyeniye, no. 1, 1966, 34-35

TOPIC TAGS: nickel, nickel alloy, nickel alloy coating, titanium silicon coating, titanium aluminum coating, coating oxidation, oxidation resistance, oxidation resistant coating, coating corrosion, gas corrosion, corrosion resistance/ZhS6-K nickel alloy

ABSTRACT: An attempt has been made to improve the resistance of ZhS6-K nickel-base alloy to gas corrosion at 850—900C in an atmosphere containing sulfur and sea-water vapors by means of titanium-silicon and titanium-aluminum diffusion coatings. Coating was done by pack cementation with coating elements used simultaneously or serially. It was found that in simultaneous impregnation, the depth of the diffusion layer decreases with an increase of titanium in the mixture. At a titanium content of 90—95%, mainly titanium diffuses while at a titanium content of 30—35%, silicon or aluminum diffuse. Best results in simultaneous impregnation were obtained at 900C

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UDC: 669.65:669.295.001.5

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ACC NR: AP6004167

with a mixture containing 60—80% Ti. The stepwise impregnation produced better results than the simultaneous impregnation, especially when silicon or aluminum were applied first. Both silicon-titanium and aluminum-titanium coatings greatly increased the resistance of ZhS6-K alloy to gas corrosion. In tests at 900C, after 15 hr the uncoated alloy was corroded to a depth of 1000—1500 μ and coated alloy to a depth of only 100 μ . Orig. art. has: 4 figures. [ND]

SUB CODE: 13/ SUBM DATE: none/ ORIG REF: 002/ ATD PRESS: 4169

FW
Card 2/2

ACC NR: AP6030864

SOURCE CODE: UR/0365/66/002/005/0576/0580

AUTHOR: Zemskov, G. V.; Kogan, R. L.; Dombrovskaya, Ye. V.; Kostenko, A. V.;
Shevchenko, I. M.; Koss, Ye. V.; Fadeyeva, E. V.; Khmelevskaya, M. Ye.; Mikotina, N. F.

ORG: Odessa Polytechnical Institute (Odesskiy politekhnicheskiy institut)

TITLE: Protective diffusion coatings of nickel alloy

SOURCE: Zashchita metallov, v. 2, no. 5, 1966, 576-580

TOPIC TAGS: ^{alloy}nickel chromium alloy, aluminum containing alloy, titanium containing alloy, tungsten containing alloy, ~~alloy~~ protective coating, ~~alloy~~ corrosion resistance, diffusion coating alloy, alloy oxidation resistance/ZhS6-K alloy

ABSTRACT: A series of diffusion coatings were tested for protection of ZhS6-K nickel base alloy (0.13—0.20% carbon, 10.5—12.5% chromium, 5—6% aluminum, 2.5—3% titanium, 2.5—3% tungsten, 4.5—5.5% molybdenum, 0.13—0.20% boron) against gas corrosion in a mixture of products of sulfurous fuel combustion and sea water vapors after all attempts to improve alloy oxidation resistance by alloying failed. Alloy specimens were diffusion coated with one or two elements used simultaneously or one after the other. The coating was done by a pack cementation at 900—1000C for 10 hr. Chromium, aluminum, silicon, titanium, boron, cerium, beryllium and magnesium were used as single-element coatings. Chromium with titanium, silicon, aluminum, or boron; aluminum with boron, cerium, or titanium; titanium with silicon or boron; manganese with boron;

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ACC NR: AP6030864

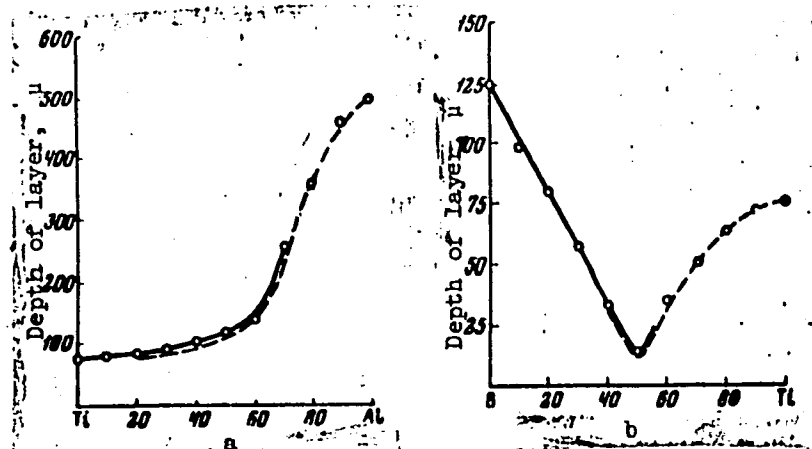


Fig. 1. Dependence of the change of the diffusion layer depth upon the content of elements in the mixture

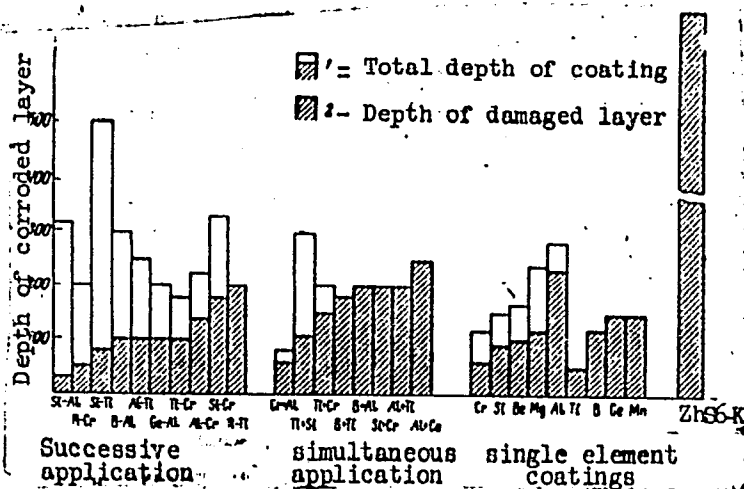
a - Aluminum-silicon impregnation; b - boron-titanium impregnation.

a

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ACC NR: AP6030864



cerium with boron; and silicon with aluminum were used for binary coatings. Corrosion tests were done in combustion products containing 0.74% and 0.11% sea water at 900C for 15 hr. It was found that all the coatings tested have a higher corrosion resistance than the uncoated alloy (see Fig. 1). Binary coatings protect the alloy more efficiently than single-element coatings, especially with the consecutive method of

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SUB CODE: 11, 13/ SUBM DATE: 13Jul65/ ATD PRESS: 5077

APPROVED FOR RELEASE: 06/14/2000

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KOSTENKO, Anastasiya Yakovlevna; GORODETSKIY, Ye.N., red.; VORZHETSOVA, L.N., red.; NOVOSHLOVA, V.V., tekhn.red.

[Study topics for the 10th grade: "Reorganization of the national economy" and "Consolidation of the Soviet multinational state"] *Isuchenie temy "Vosstanovlenie narodnogo khoziaistva. Ukreplenie Sovetskogo mnogonatsional'nogo gosudarstva" v X klasse. Moskva, Izd-vo Akad.pedagog.nauk RSFSR, 1959. 81 p.* (MIRA 13:2)

(Russia--Economic policy) (Russia--History)

POKHODNYA, I.K.; KOSTENKO, B.A.

Melting of the electrode metal and its interaction with slag
during the process of welding under flux. Avtom. svar. 18
no.10:16-22 0 '65. (MIRA 18:12)

1. Institut elektrosvar'ki im. Ye.O. Patona AN UkrSSR.

PROKHODNYA, I.K.; KOSTENKO, B.A.

Investigating the kinetics of electrode melting during welding.
Avtom. svar. 18 no.4:11-14 Ap '65. (MIRA 18:6)

1. Institut elektrosvariki imeni Patona AN UkrSSR.

L 1303-66 EMI(d)/EMI(1)/EMI(m)/EMP(c)/EMP(v)/I/EMP(t)/EMP(k)/EMP(b)/EMP(1)/

ACCESSION NR: AP5022352

EED(b)-3/EMA(c)/

ETC(m) LJP(c)

UR/0135/65/000/009/0037/0037

621.791.75.01:621.386.8

ID/NN/IM

AUTHOR: Madatov, N. M. (Engineer); Pokhodnya, I. K. (Candidate of technical sciences); Kostenko, B. A. (Engineer)

TITLE: High-speed cineradiography of the welding arc underwater

SOURCE: Svarochnoye proizvodstvo, no. 9, 1965, 37

TOPIC TAGS: X ray photography, arc welding, welding electrode, underwater welding

ABSTRACT: A setup for high-speed cineradiography of the underwater welding arc is described for the case of bead forming on the rib of a steel plate placed in an aluminum water tank equipped with inlet and outlet cocks for the replacement of water and with illuminating lamps. This beading was performed with the aid of unit electrodes as well as of thin-wire electrodes. Radiography of the beading was carried out with the aid of a TUR-1000 apparatus under the following conditions: anode current, 160 ma; anode voltage, 115 kv; photographing time, 1.5 sec; photographing rate, 750-1000 frames/sec; distance from tube to electrode.

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300 mm. Despite the presence of a strongly scattering medium -- water -- images with adequate contrast were obtained with respect to the terminal, electrode, drop, plate (specimen), and the steam-gas bubble. This high-speed cineradiography of the underwater arc has made it possible to establish a number of parameters of the underwater welding process. In particular, it was found that the steam-gas bubble around the arc under water is relatively immobile and its oscillations obey a cyclic law. The bubble grows from the minimum up to a critical maximum beyond which it is destroyed and almost completely floats to the surface. Contrary to the traditional concept, it was found that tiny gas bubbles do not separate from this bubble. The transfer of metal in the arc during underwater welding proved to differ sharply depending on whether unit electrodes or thin-wire electrodes were used: in the first case the transfer of metal occurred continuously, as a rule, whereas in the second case (thin-wire electrode) transfer occurred in the form of large drops with a diameter 2-3 times as large as the electrode diameter. In short, cineradiography of the underwater welding arc is a highly promising technique which should be further improved and refined. Orig. art. has: 3 figures.

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ACCESSION NR: AP5022352

ASSOCIATION: IES im. Ye.O. Patona 44,55

SUBMITTED: 00

ENCL: 00

SUB CODE: IE, OP

NO REF SOV: 001

OTHER: 000

Card 3/3

POKHOENYA I.K.; MARCHENKO, A.Ye.; KOSTENKO, B.A.

Duration of the interaction of the liquid electrode metal with
slag and gases during welding. Avtom. svar. 18 no.5:8-10 My '65.
(MIRA 18:6)

1. Institut elektrosvarki im. Ye.O. Patona AN UkrSSR.

MADATCV, N.M., ingh.; POKHODNYA, I.K., kand. tekhn. nauk; KOSTENKO, B.A.,
ingh.

High-speed radiography of an underwater welding arc. Svar. proizv.
no.9:37 S '65. (MIRA 18:9)

1. Institut elektrosvarki imen. Ye.O.Patona AN UkrSSR.

LOSHKAREV, M.A.; KOSTENKO, B.N.; CHERNENKO, V.I.; SEVRYUGINA, M.P.

Selecting optimal conditions for copper electrocrystallization.
Trudy DKHTI no.16:43-54 '63. (MIRA 17:2)

CHERNENKO, V.I.; KOSTENKO, B.N.; LEVITIN, Zh.N.; PETRENKO, A.I.

Study of the process of copper refining. Zhur. prikl. khim.
36 no.11:2491-2498 N '63. (MIRA 17:1)

POSTNIKOV, I.M.; KOSTENKO, D., redaktor; BARATOV, E., redaktor;
GOLOVCHENKO, G., tekhnicheskii redaktor

[Designing electric machinery] Proektirovanie elektricheskikh
mashin. Kiev, Gos. izd-vo tekhnicheskoi lit-ry USSR, 1952. 736 p.
(MLRA 7:8)

(Electric machinery--Design and construction)

КОСТЕНКО
KOSTENKO, D.G.

Light industry of the Ukrainian S.S.R. on the 40th anniversary of
the Great October Revolution. Leg.prom. 17 no.11:22-28 N '57.
(MIRA 10:12)

1.Ministr, nachal'nik otдела legkoy promyshlennosti Gosplana USSR.
(Ukraine--Manufactures)

KOSTENKO, D.G.

Clothing industry of the Ukrainian S.S.R. during the seven-year plan
period. Slvein.prom. no.2:1-3 Mr-Ap '61. (MIRA 14:4)
(Ukraine--Clothing industry)

KOSTENKO, D.G.

Wool

Raise the quality of hides and wool.
Kolkh.proizv. 12 No. 7 1952.

9. Monthly List of Russian Accessions, Library of Congress, October 195²₃, Uncl.

KOSTENKO, D.G., inzh.

Methods and trends in the processing of raw pigskins. Kosh.-obuv.
prom. no.8:13-14 Ag '59. (MIRA 13:1)
(Hides and skins)

KOSTENKO, D.G.

All-Union review of the shoe industry. Kozh.-obuv.prom. 3 no.2:
8-10 F '61. (MIRA 14:4)

(Shoe industry—Exhibitions)

KOSTENKO, D.G.

Specialization and cooperation in the leather and shoe industry in
the Ukrainian S.S.R. Kozh.-obuv.prom. 3 no.9:6-9 S '61.

(MIRA 14:11)

(Ukraine--Leather industry) (Ukraine--Shoe industry)

KOSTENKO, D.G.

Improve the quality of footwear. Kozh.-obuv.prcm. 4 no.4:8-10
Ap '62. (MIRA 15:5)

1. Nachal'nik otdela legkoy promyshlennosti Gosplana USSR.
(Shoe manufacture)

KOSTENKO, D. G.

Objective control is the basis of the quality of production.
Kozh. obuv. prom. 4 no.10:12-13 0 '62.

(MIRA 15:10)

(Shoe manufacture—Quality control)

KOSTENKO, D.G., inzh.; LIVYY, G.V., kand.tekhn.nauk; PONOMAREV, S.G., kand.
tekhn.nauk; RABINOVICH, F.I., inzh.; MALKIMAN, Ye.I., inzh.

Effect of the various methods for tanning stiff leather on its
wear resistance. Report No.3. Nauch.-issl.trudy Ukr NIIKP no.13:3-
12, '62. (MIRA 18:2)

KOSTENKO, D.I., leytenant meditsinskoy sluzhby

Effect of ultrashort radio waves on the human body. Voen.-med. zhur.
no.3:85 Nr '56.

(MIRA 9:9)

(RADIO WAVES--PHYSIOLOGICAL EFFECT)

KOSTENKO, D. I.

USSR/Miscellaneous---machine construction

Card 1/1

Author : Kostenko, D. I., engineer

Title : Molybdenless steel for cold punch-press work and tools

Periodical : Vest. mash. 34/3, 40-45, Mar/1954

Abstract : In making punches, thread-cutting dies and other tools which are subject to heavy pressure, instead of X12M molybdenum steel, X12TF steel may be used, which contains titanium. Experiments show that samples of both steels 16 to 100 mm in diameter are tempered all the way through. The capacity of steel to retain hardness after repeated tempering is the test of its resistance to heat. Special attention is given to the production of thread-cutting dies. Tables; graphs.

Institution :

Submitted :

13027* (Russian.) New Method of Heat Treating Forgings
Novyi metod termicheskoi obrabotki

lenki. Avtomobilnyi zavod, Leningrad, 1964, 1 s.

1. M. 1964, 84.

The use of cemented steels and alloys for heat treating at high temperatures.

Abstract of a report in Russian.

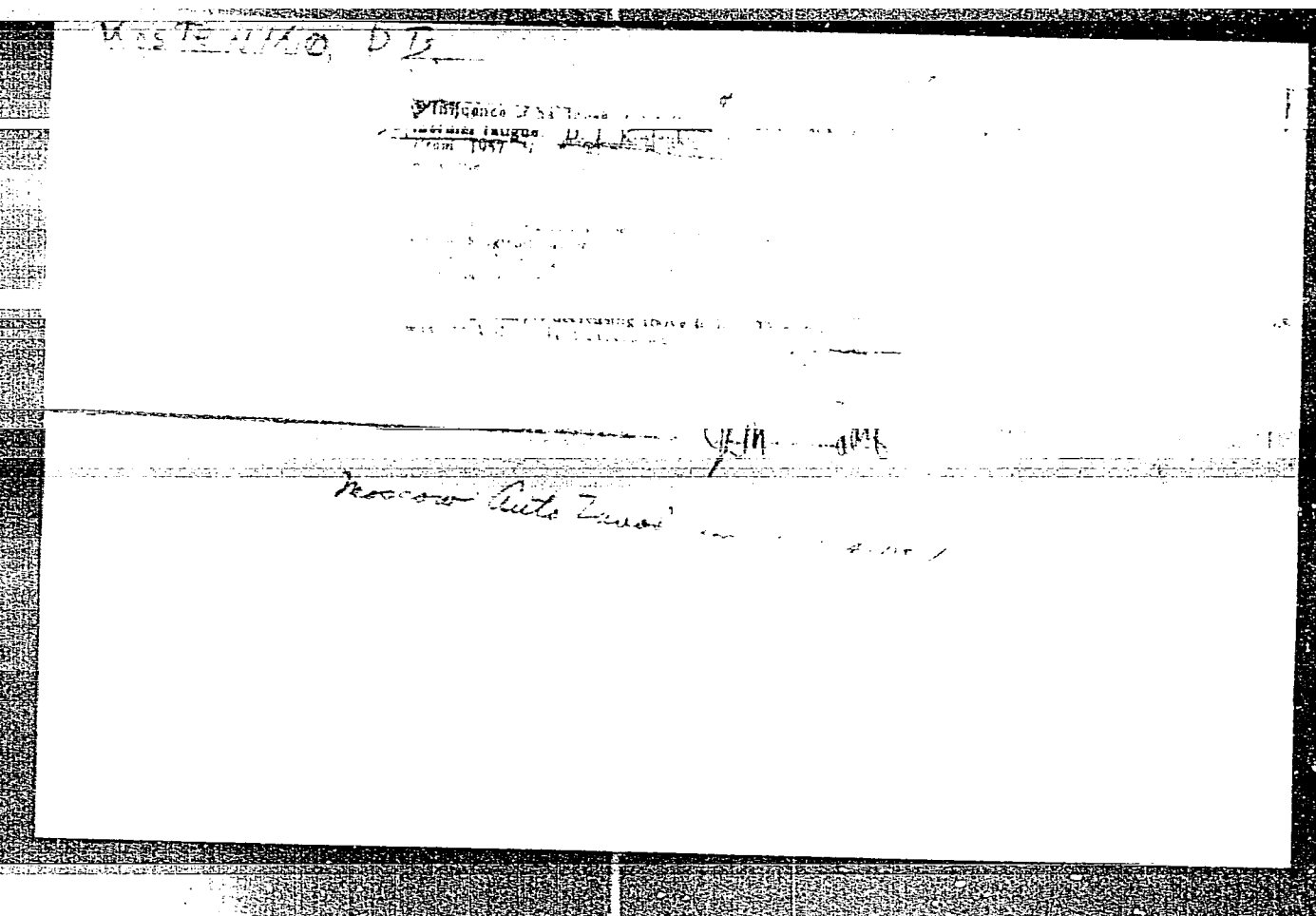
Abstract of a report in Russian.

Abstract of a report in Russian.

Abstract of a report in Russian.

Abstract of a report in Russian.

of



KOSTENKO, D.I.

Effect of the macrostructure of steel and surface conditions of dies on the occurrence of cracks caused by thermal fatigue.

Avt.i trakt.prom. no.8:29-34 Ag '57. (MIRA 10:12)

1. Moskovskiy avtozavod imeni Likhacheva.
(Steel--Metallography) (Dies (Metalworking))

KOSTENKO, D.I., Cand Tech Sci—(diss^{du}) "Study of thermal fatigue of ~~steel~~
steel." Mos, TsBNTI of Heavy Machine Building, 1958. 20 pp (Glavniiproekt
under Gosplan USSR. Central Sci Res Inst of Technology and Machine Build-
TsNITMash
ing), 120 copies (KL,26-58,110)

- 73 -

KOSTENKO, D. I.

The first N. A. Minkevich prize was given to the following teams:
Candidate of Technical Sciences A. D. Assonov, Engineers N. I. Tereshchin,
V. F. Nikonov, D. I. Kostenko, S. G. Marinchev, I. S. Yurkov, N. N. Inshakova,
M. N. Yanchuk, A. A. Bulatnikov and G. Ye. Litvin (Automobile Works imeni
Likhachev) for their paper "Investigation and Introduction of the Process of
Nitrocementation by Direct Isothermal Hardening in an Alkali Inside Muffleless
Equipment", their design of a muffleless furnace heated by vertical radiation
tubes is of interest.

Results of the 1958 Competition for Obtaining imeni D. K. Chernov and imeni
N. A. Minkevich Prizes, Metallovedeniye i termicheskaya obrabotka metallov,
1959, No. 6, pp 62-64

KOTOV, Or Kirillovich, kand. tekhn. nauk; KOSTENKO, D.I., kand. tekhn. nauk,
retsenzent; IVANOVA, N.A., red. izd-va; DOBRITSYNA, R.I., tekhn. red.

[Surface hardening of machine parts by chemical and thermal methods]
Poverkhnostnoe uprochnenie detalei mashin khimiko-termicheskimi metoda-
mi. Izd.2., ispr. i dop. Moskva, Gos. nauchno-tekhn. izd-vo mashino-
stroit. lit-ry, 1961. 278 p. (MIRA 14:8)

(Surface hardening)

SERGEYCHEV, Ivan Mikhaylovich; PECHKOVSKIY, Aleksey Mikhaylovich;
(KOSTENKO, D.M., retsenzent; IZAKOV, N.R., kand.tekhn.nauk, red.;
RZHAVINSKIY, V.V., inzh., red.isd-va; EL'KIND, V.D., tekhn.red.

[Heat treatment of cutting and measuring tools] Termicheskaia
obrabotka rezhushchego i izmeritel'nogo instruments. Moskva, Gos.
nauchno-tekhn.isd-vo mashinostroit.lit-ry, 1960. 305 p.

(MIRA 13:12)

(Tool steel--Heat treatment)

GUBENKO, Tikhon Pavlovich. Prinimali uchastiye: KARANDEYEV, K.B., prof.; retsenzent;
BASKUTIS, P.A., prof., retsenzent; ~~KOSTENKO, D.P., dots., retsenzent;~~
LUKIN, V.I., dots., otv. red.; BLIKH, V.V., red.; SARANYUK, T.V., tekhn.
red.

[Loci of the electric current of induction machinery; application and
methodology for designs] Geometricheskie mesta tokov induktsionnykh
mashin; metodika postroeni i primeneniye. L'vov, Izd-vo L'vovskogo
univ., 1960. 258 p. (MIRA 14:9)

1. Chlen-korrespondent AN SSSR (for Karandeyev).
(Electric motors, Induction)

TARASHCHANSKIY, Miron Moiseyevich, kand. tekhn. nauk, dots.[deceased];
KOSTENKO, D.P., dots., retsenzent; KOVAL'CHUK, A.V., inzh.,
red. izd-va; SHAFETA, S.M., tekhn. red.

[Synchronous-reactive frequency converters] Sinkhronno-
reaktivnye preobrazovateli chastoty. Kiev, Gostekhizdat,
USSR, 1962. 178 p. (MIRA 15:10)

1. Kiyevskiy ordena Lenina politekhnicheskij institut (for
Kostenko).

(Frequency changers)
(Electric current converters)

NICHIPORENKO, S.P.; KHIL'KO, V.V.; KOSTENKO, E.A.

Theoretical principle for the making up of ceramic paste batches.
Stek. i ker. 18 no.10:28-32 0 '61. (MIRA 14:11)
(Ceramics)

L 42990-65 EPF(n)-2/EPA(s)-2/EPA(w)-2/ETC(m)/EAP(1)/EAP(b)/EAP(e) Pt-7/Pu-4/
Feb-10 CH

ACCESSION NR: AP5008357

S/0021/65/000/003/0348/0350

AUTHOR: Nychyporenko, S. P.; Kostenko, E. A.

TITLE: Structural and mechanical characteristics of ceramic materials

SOURCE: AN UkrRSR. Dopovidi, no. 3, 1965, 348-350

TOPIC TAGS: mechanical property, ceramic material, ceramic strength, ceramic elasticity, ceramic prism

ABSTRACT: The standard methods for evaluating the mechanical properties of ceramic ware, including structural materials, involve primarily the evaluation of different types of temporary resistance during compression, bending, etc. Such standard evaluations do not simulate the actual working conditions of the ceramic ware and are consequently unsuitable for the determination of the relationship between their structure and their performance. In the present work, the deformation processes of ceramic ware were therefore investigated with prolonged loading. The deformation-time curves (Figure 1 of the Enclosure) are satisfactorily described by the Maxwell-Shvedov equation and by the Kelvin model. It was established that there exists a static yield point, a region of constant modulus of elasticity and a maximum plastic viscosity. Orig. art. has: 2 figures and 1 formula.

Card 1/1

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L 42990-65

ACCESSION NR: AP5008357

ASSOCIATION: Instytut zahal'noyi ta neorhanichnoyi khimiyi AN URSR (Institute
of general and inorganic chemistry, AN URSR)

SUBMITTED: 05Feb64

ENCL: 01

SUB CODE: MT, ME

NO REF SOV: 012

OTHER: 001

Card 2/3

KOSTENKO, F. G.

Production of Bessemer converter bottoms. V. N. Meshchishen, P. A. Brylev, F. G. Kostenko, and E. F. Vit. *Ogneupory*, 15 (10) 441-46 (1950). -- Up to 1949, the average life of bottoms made at the Enakievsk Metallurgical Works from 50% Tarasov quartzites, 30% Prosyantovsk clay, 10% Chasov-Yar clay, and 10% coke breeze was 7.5 heats. This was raised to over 12 heats by improving the grain size, ramming, and drying and by changing the number and distribution of tuyeres in the bottom. The grain size of the clay was 5 to 1 mm. 30 to 40%, and 1 to) mm. 60%; grain size of the quartzite was 7 to 3 mm. 30 to 40%, 3 to 1 mm. 25 to 30%, and 1 to 0 mm. 35 to 50%; the coke breeze left no residue on a 3-mm. sieve. The mix was analyzed as SiO_2 70 to 74, Al_2O_3 11.5 to 14.5, Fe_2O_3 up to 1.9, CaO 0.8, and ignition loss 9 to 14%. Ash in breeze was not over 13%. The moisture of the mix was 6.5 to 7.5%. The mix was rammed with pneumatic hammers in boxes with plates for 18 tuyeres, using an air pressure of 5 atm. The layer thickness was 30 to 35 mm., and the number of layers was 18. Drying lasted 222 hr., up to 100° at 5°/hr. and for 100° to 200° at 10°/hr. The pieces were cooled to 100° in the kiln and to 60° with the roof hatches open.

B.Z.K.

KOSTENKO, F.G.

Increasing the output of 80-ton electric-arc steel-smelting
furnace. Biul. tekhn.-ekon. inform. Gos. nauchn.-issl. inst.
nauch. i tekhn. inform. 18 no.10:3-4 0 '65. (MIRA18:12)

S/193/61/000/007/001/005
A004/A104

AUTHOR: Kostenko, F. G.

TITLE: Development trend of the production and utilization of low-alloyed steels in the national economy

PERIODICAL: Byulleten' tekhniko-ekonomicheskoy informatsii, no. 7, 1961, 7-10

TEXT: In his article the author presents a detailed survey on the utilization of low-alloyed steel grades based on data prepared by the Interim Commission of ONTK RSFSR. He states that the introduction of low-alloyed steels in combination with heat treatment makes it possible to cut down metal consumption by 20-25 % on account of increased strength properties. Under GOST (GOST) 5058-57 a list of steel grades has been published not requiring the application of alloying elements which are in short supply, as well as the utilization of steel grades smelted on the basis of naturally alloyed ores of the Orsko-Khalilov deposits. By 1965 the demand in low-alloyed steels in the RSFSR will amount to 3,500-4,000 thousand tons, while the utilization of low-alloyed steels will reduce the total consumption of rolled metal in 1965 by 700-800 thousand tons. Since nickel and copper are in short supply it is necessary to introduce on a wide scale the non-nickel and non-copper steel grades 15ГC (15GS), 14ХГC (14KhGS) and 14Г2 (14G2).

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Development trend of the production ...

S/193/61/000/007/001/005
A004/A104

as well as the 09Г2 (0902) and 16ГТ (160Т) steel grades. The two latter grades excel by their good weldability, plastic properties, high cold resistance, vibration and impact strength and possess a high resistance to atmospheric corrosion. Investigations have been terminated to study the utilization of the 1402 and 150S grade steels for building and industrial metal structures. For main pipe lines 14KhGS grade steel can replace the 190 steel, the former having a strength limit of 52 kg/mm² compared to 48 kg/mm² of the latter. The author recommends the utilization of the grades 12ХГН (12KhON) or 10ХГЦНД (СХЛ-4) (10KhGSND [SKhL-4]) without copper in railroad car building which would ensure a strength limit not lower than 50 kg/mm². The low-alloyed grades 10KhSND (SKhL-4) and 12KhON without copper or the 14KhGS non-nickel steel would ensure a high vibration strength of welded structures in tractor building, while hinged and trailer-type machines in the construction of agricultural machines instead of carbon steel may be built of the low-alloyed high-strength 150S, 1402 and 14KhGS grades. For parts requiring a higher strength the author recommends the 18Г2С (1802S) and 25Г2С (2502S) grade steels. He considers the utilization of the grades 150S, 1402 and 14KhGS to have great prospects in automobile construction, in the construction of cranes and excavators and for the manufacture of mine cars, scraper conveyers, supports, chains and other mining equipment. Although at present Glavgaz USSR is the only

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S/193/61/000/007/001/005
A004/A104

organization demanding an increase in the strength limit up to 60-70 kg/mm² the introduction of low-alloyed steels in the building industry and other fields will necessitate increased strength, which can be achieved in the next future by the application of hardening heat treatment and by alloying with cheap elements, e.g. Mn, Si, Cr, and, possibly, B. Particularly for large sections and thick plates from low-alloyed steels heat treatment is necessary since it is not possible to obtain in the hot-rolled state a sufficient strength, toughness, cold-brittleness threshold etc. owing to the high temperature prevailing at the end of the rolling process in modern high-speed mills. This applies to the manufacture of rods of alternating shapes of the high-strength 30X12C (30KhG2S) grade steel. By the thermal hardening of low-alloyed thick plate material the strength can be increased by 10-15% in comparison with hot-rolled plates. An increase in strength of thinner sections up to 20-25% is possible. It has to be taken into account, however, that for steels being welded the possibility of increasing the strength by heat treatment is limited because of the softening of these structures in the zone of thermal effect of the welding joint. New compositions have to be found permitting to extend the range of the alloying elements Mo, W, V and others, which would ensure high strength also for structures of great thickness and increase the resistance of steel to the thermal effect of the welding joint. At present

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S/193/61/000/007/001/005
A004/A104

investigations have begun at the TsNII chernoy metallurgii (TsNII of Ferrous Metallurgy) to develop low-alloyed steels with a strength limit in the range of 60-75 kg/mm². Another method of increasing the quality of low-alloyed steels would be the utilization of the rare elements Ce and Zr. Tests carried out at the TsNIICHM already during 1955-1958 showed that the addition of cerium to misch metal (Ce - 40%, the rest being La, Pr, Nd) can positively affect the properties of low-alloyed steels. In some cases a reduction in sulfur from 0.020 to 0.005% and an improvement of the impact strength at minus temperatures could be observed. Investigations of the TsNIICHM of the effect of zirconium on the steel properties showed that additions of up to 0.10% can have a positive effect on these properties concerning a reduction of the anisotropy of properties.

Card 4/4

KOSTENKO, F.G.

Great potentialities in steel production. Biul.tekh.-ekon.
inform.Gos.nauch.-issl.inst.nauch. i tekhn.inform. 16 no.11:
3-5 '63. (MIRA 16:11)

KOSTENKO, F.G.

Socialist competition in enterprises and on construction sites
of the Lipetsk Province Economic Council. Biul.tekh.-ekon.
inform. no.3:77 '61. (MIRA 14:3)
(Lipetsk Province—Socialist competition)

KOSTENKO, F.G.

Introducing new equipment in ferrous metallurgy. Biul.tekh.-ekon.
inform. no.5:3-6 '61. (MIRA 14:6)

(Iron industry--Technological innovations)

(Steel industry--Technological innovations)

KOSTENKO, F.G.

Use of ultrasonic techniques in metalwork. Biul.tekh.ekon.inform.
Gos.nauch.-issl.inst.nauch.i tekh.inform. 17 no. 18:42-53:40 '64.
(MIRA 18:4)

KOSTENKO, F.G.

Replacing tinned iron plate by chromium plated iron sheet. Biul.tekh.-
ekon.inform.Gos.nauch.-issl.inst.nauch.i tekhn.inform. 18 no.9:49-50
S '65. (MIRA 18:10)

KOSTENKO, F.G.

Preparing a coordination plan for research in ferrous metallurgy.
Biul.tekh.-ekon.inform.Gos.nauch.-issl.inst.nauch.i tekhn.inform.
no.5:81 '62. (MIRA 15:7)

(Metallurgical research)

KOSTENKO, F.G.

Improving the quality of transformer steel. *Biul.tekh.-ekon.inform.*
Gos.nauch.-issl.inst.nauch.i tekhn.inform. no.1:78-79 '63.
(Steel) (MIRA 1642)

L 11161-63 EWP(q)/EWT(m)/BDS--AFFTC/ASD--DE/JT/JD
ACCESSION NR: AP3001013

S/0193/63/000/004/0003/0008

AUTHOR: Kostenko, F. G.

TITLE: Vacuum processing of steel outside the furnace

SOURCE: Byul. tekhniko-ekonomicheskoy informatsii, no. 4, 1963, 3-8

TOPIC TAGS: steel, vacuum processing, steam-ejector pump, Verkh-Isetskiy Metallurgical Plant, Dneprospeysstal'

ABSTRACT: Since 1959 vacuum processing of steel outside the furnace has developed in all countries with metallurgical industries. Vacuum processing outside the furnace assures a decrease in hydrogen content to 1.2-2.0 cc/100 g and an oxygen content of .001% and lower, elimination of the harmful effects of nitrogen on steel properties, and the production of a metal homogeneous in chemical composition and properties. Under these conditions it is possible to cut the oxidation and reduction smelting periods because deep deoxidation and degasification takes place outside the furnace in the ladle. The first vacuum equipment designed and built at the mashinostroitel'nyy zavod im. Lenina Zapadno-Ural'skogo sovnarkhoza (Machine-Building Plant, Zapadno-Ural'skiy Sovnarkhoz) in 1957 could vacuum process steel by several methods: soaking the metal in a ladle under slag, vacuum processing in a

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L 11161-63

ACCESSION NR: AP3001013

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jet while filling an ingot mold. Since 1959 the only method used is soaking the metal in a ladle under slag for 10-15 min. Steam-ejector pumps have proven superior to mechanical pumps because they produce a deeper and steadier vacuum. In the third quarter of 1962 at the Kazanskiy mekhanicheskiy zavod (Kazan Mechanical Plant), two steam-ejector pumps were built capable of producing 100 kg of dry air per hour at a residual pressure of 1 mm mercury column for the Verkh-Isetskiy metallurgicheskiy zavod (Verkh-Isetskiy Metallurgical Plant) and the zavod Dneprospetsstal' (Dneprospetsstal' Plant), but they have not been set up yet. At a scientific-technical conference held in December 1962 it was recommended to process molten metal in vacuum processing equipment outside the furnace at a residual pressure of 0.5-1 mm mercury column. But these limits cannot be assured by mechanical pumps and therefore all equipment must be fitted with steam-ejector pumps as they become available and without causing work stoppages. The conference also recommended development of new methods of vacuum processing such as bubbling, inert gas blowing under vacuum, jet evacuation, and others.

ASSOCIATION: none

SUBMITTED: 00

DATE ACQD: 11Jun63

ENCL: 00

SUB CODE: 00
Card 2/2 CS/Sm

NO REF SOV: 000

OTHER: 000

KOSTENKO, F.G.

Organization of the manufacture and the introduction of thin-walled
water and gas welded pipes. Biul.tekh.-ekon.inform.Gos.nauch.-
issl.inst.nauch.i tekhn.inform. 16 no.7:71-72 '63. (MIRA 16:8)
(Water pipes) (Gas pipes)

KOSTENKO, F.G.; BABIKOV, K.S.

All-Russian conference of workers of plant laboratories in hardware plants. Biul.tekh.-ekon.inform.Gos.nauch.-issl.inst.nauch.i
tekh.inform. 17 no.7:74-75 J1 '64.
(MIRA 17:10)

L 35515-65 EWT(m)/EWP(t)/EWP(b) JD
ACCESSION NR: AP5005385

S/0193/65/000/001/0013/0016

AUTHOR: Kostenko, F. G.

TITLE: Introduction of new technology in the RSFSR plants of ferrous metallurgy

SOURCE: Byulleten' tekhniko-ekonomicheskoy informatsii, no. 1, 1965, 13-16

TOPIC TAGS: synthetic slag refining, steel refining, steel vacuum degassing, steel continuous casting, stainless tube, welded tube, high strength drill pipe

ABSTRACT: During 1964 the attention of ferrous metallurgists in the RSFSR was directed mainly to the improvement of quality. Steel refining with synthetic slag in ladle was extensively applied. The method greatly improves the physicomechanical properties and workability of steels. Continuous casting of electrical, stainless, and other steels was introduced in several plants of the Central, Volga-Vyatka, and Western-Ural districts. The use of vacuum degassing was expanded. In 1964 more than 150,000 tons of steel were degassed. New high-capacity, steam-ejector, vacuum pumps were developed by the Kazan' Central Design Bureau of Vacuum Engineering and built at some plants. Mass production of welded stainless- and carbon-steel tubes 10-102 mm in diameter was begun at the Moscow Tube Plant, and the new Pervouralsk Tube Plant produced several experimental lots of drill pipes for bore holes up to 7000 m deep.

Card 1/2

[AZ]

L 35515-65

ACCESSION NR: AP5005385.

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: MM

NO REF SOV: 000

OTHER: 000

ATD PRESS: 3217

Card 2/2 *As*

KAVETSKIY, R.E.; KOSTENKO, P.M.

Vladimir Petrovich Filatov. Visnyk AN URSR 26 no.2:39-44 P 155.
(Filatov, Vladimir Petrovich, 1875-) (MIRA 8:4)

VAYNBERG, B.G.; BRUTMAN, Ye.I.; KOSTENKO, F.M.

Experimental observations on the reproduction of trachoma virus in the bodies of small laboratory animals and a study of their antigenic properties. Zhur.mikrobiol.epid. i immun. 27 no.9:97-102 S 156.

(MIRA 9:10)

1. Iz Odesskogo instituta vaksyn i syvorotok im. I.I.Mechnikova i Kliniki glaznykh bolezney Odesskogo meditsinskogo instituta im. N.I.Pirogova.

(TRACHOMA, experimental,
infect. of small laboratory animals, passage of virus &
antigenic properties (Rus))

BUSHMICH, D.G., starshiy nauchnyy sotrudnik; KOSTENKO, F.M., kandidat
meditsinskikh nauk

Concerning R.G.Ot'ian's article "On the articles by Prof. S.F.Kal'fa
and Dr.A.F.Pukhner and other problems connected with trachoma."
Oft.zhur. 12 no.1:44-49 '57. (MLRA 10:8)

1. Iz Ukrainskogo nauchno-issledovatel'skogo eksperimental'nogo
instituta glaznykh bolezney i tkanevoy terapii im. akad. V.P.Filatova
(direktor - prof. N.A.Puchkovskaya) i kliniki glaznykh bolezney im.
akad. V.P.Filatova Odesskogo meditsinskogo instituta im. N.I.Pirogova
(CONJUNCTIVITIS, GRANULAR)

L 06515-67 ENT(m)/ENP(j) RM
ACC NR: AP7000477

SOURCE CODE: UR/0079/66/036/006/1098/1104

MARKOV, S. M., POLEKHIN, A. M., LOSHADKIN, N. A., KOSTENKO, G. A., MOROZOVA, Z. V., YAKUBOVICH, M. M.

"Nucleophilic Substitution at the Tetrahedral Phosphorus Atom. II. General Problems of Kinetics of Alkaline Hydrolysis of Derivatives of Phosphorus Acids"

28
B

Moscow, Zhurnal Obshchey Khimii, Vol 36, No 6, 1966, pp 1098-1104

Abstract: The kinetics of the alkaline hydrolysis of fluorides and nitrophenyl esters of phosphorus atoms was studied as a function of the pH. A modified Guggenheim method was proposed for calculating the rate constants of first-order reactions. Sample calculations were performed for ethoxymethylphosphonate, butoxymethylfluorophosphonate, and diisopropylfluorophosphonate. The values of E , $\log A$, ΔS^\ddagger , and ΔG^\ddagger of the alkaline hydrolysis of these phosphorus-containing compounds and the standard deviations of these quantities were calculated by the method of least squares. The temperature dependence of the rate constant was also studied for the alkaline hydrolysis of fluorides and nitrophenyl esters of phosphorus acids; it was found to obey an Arrhenius equation. Orig. art. has: 4 figures, 14 formulas and 3 tables.

[JPRS: 37,023]

ORG: none

TOPIC TAGS: hydrolysis, nonmetallic organic derivative, organic phosphorus compound

Card 1/15 SUB CODE: 07/SUBM DATE: 05MAR 64 / ORIG REF: 005 / OTH REF: 013 UDC: 546.43+543.878
0923 1745

VASHCHENKO, K.I., doktor tekhn.nauk; FIRSTOV, A.N., kand.tekhn.nauk;
ZHIZHCHEKNO, V.V., kand.tekhn.nauk; DUPLYAK, V.D., inzh.; AVDOKUSHIN,
V.P., inzh.; KOSTENKO, G.D., inzh.; GOLOVAN', N.A., inzh.

Die-casting of bimetallic motorcycle cylinders. Mashinostroenie
no.4:65-68 J1-Ag '65. (MIRA 18:8)

14186-53 ENP(K)/ENP(E)/T/ENP(I)/ETI ENP(G) 22/24

ACC NR: AP6026024

SOURCE CODE: UR/0418/66/000/001/0043/0046

AUTHOR: Vashchenko, K. I. (Doctor of technical sciences); Zhizhchenko, V. V. (Candidate of technical sciences); Firstov, A. N. (Candidate of technical sciences); Kostenko, G. D. (Engineer)

ORG: none

TITLE: Intensity of iron saturation in calorizing alloys and methods for refining them

SOURCE: Tekhnologiya i organizatsiya proizvodstva, no. 1, 1966, 43-46

TOPIC TAGS: aluminum containing alloy, metallurgic process, metal purification, binary alloy, temperature test, metal melting, intermetallic compound, iron containing alloy, metallurgy

ABSTRACT: The authors point out that the extent to which aluminum alloys are saturated by iron during calorizing has not been studied up to the present time and little effort has been made to develop methods for purifying these alloys. The problem of refining is important not only from the standpoint of producing binary alloy castings but also for purification of cast aluminum alloys in which iron is a harmful impurity.

Iron saturation was studied for pure aluminum and for aluminum alloys with 7.15 and 28% zinc, as well as in a zinc alloy with 0.2% aluminum since these

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UDC: 621.74.043:62:222

0916

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ACC NR: AP6026024

alloys are recommended for use in calorizing. Zinc alloy specimens with 0.2% aluminum were calorized at 535-545°C, aluminum alloys at 680-690 and 720-730°C and pure aluminum at 680-690, 720-730 and 780-790°C. Each specimen was held in the calorizing alloy for five minutes. After every five specimens had been calorized, metal samples weighing 8-10 g were removed from the vat for determining iron concentration. It was found that the specific rate of dissolution and the intensity of iron saturation are increased by raising the calorizing temperature. This is due to an increase in the activity of the melts with respect to iron (the degree of heating and the saturation limit of the iron melt increase.)

The specific rate for dissolving of cast iron in an aluminum alloy with 7% Zn shows the same relationship to iron concentration as for pure aluminum. An increase in temperature from 680-690 to 720-730°C has no effect on specific rate of dissolving. Specific rate of dissolving is increased by raising the zinc content in the melt and at a concentration of 28% the rate is the same as for pure aluminum. However, the relationship between specific rate of dissolving and iron concentration in the calorizing alloy is stronger and differs somewhat from that for pure aluminum.

A sharp reduction in the specific rate of dissolving is observed at iron concentrations below 1.0-1.4% as a function of the calorizing temperature. Beyond this point, there is some increase in the dissolving rate after which it remains practically constant. This type of behavior in the specific rate of dissolving as a function of iron concentration is due to the extreme iron deficiency

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L 34186-66

ACC NR: AF6026024

(0.012-0.018%) in the eutectic of the Zn-Fe system and the formation of inter-metallic compounds at rather low iron concentrations. The formation of Fe-Zn and Fe-Al intermetallic compounds (and possibly more complex systems) stabilizes the rate of dissolving. A zinc alloy with 0.2% aluminum yields satisfactory results in calorizing cast iron and steel. Iron saturation of this alloy is much lower than for aluminum or aluminum-zinc alloys. The specific rate of dissolution for iron in this alloy is also very low and increases somewhat with an increase in iron concentration in the alloy. Low iron saturation intensity in a Zn+0.2%Al alloy is due to the low calorizing temperature. Thus, the bath is quite highly saturated with iron during calorizing of steel in aluminum and aluminum alloys.

Two refining methods were tested: settling and filtering. Both methods are based on a reduction in the solubility of iron in aluminum and its alloys when the temperature is reduced. During settling, excess iron which is separated out in the form of aluminides or zincates is precipitated to the bottom of the vat due to its higher specific gravity. In the case of filtering, these iron compounds are retained by the filter for the same reason. Pure aluminum and aluminum-zinc alloy with 28% zinc with various initial iron concentrations were refined. The settling and filtering processes were carried out at a temperature 10-15°C above the solidus temperature. The settling time was four hours. Fusion of the refined alloys with zinc (up to 72% Zn) was used for reducing the

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L 34186-66

ACC NR: AP6026024

solidus temperature. It was found that filtering is an extremely effective refining process and is simpler and less expensive than the settling method. This method is particularly recommended for refining aluminum alloys containing zinc (Al+5-28% Zn and several cast alloys, e.g., AL111, AL114, AL115V, etc.), since the addition of up to 72% zinc to these alloys results in an extremely high purification from iron. Orig. art. has: 2 figures and 1 table. [JPRS: 35,432]

SUB CODE: 11 / SUBM DATE: none

Card 4/4

L 39110-66 ENT(r)/ENT(r)/ENT(r) LJP(r) JD

ACC NR: AP6030381

SOURCE CODE: UR/0148/66/000/004/0137/0141

AUTHOR: Vashchenko, K. I.; Firstov, A. N.; Belotskiy, A. V.; Duplyak, V. D.; Kostenko, G. D.ORG: Kiev Polytechnical Institute (Kiyevskiy politekhnicheskii institut)TITLE: Structure and phase composition of the diffusion layer in bimetallic iron-aluminum castings

SOURCE: IVUZ. Chernaya metallurgiya, no. 4, 1966, 137-141

TOPIC TAGS: phase composition, binary alloy, iron aluminum alloy

ABSTRACT: The report studies the structure and phase composition of the diffusion layer of specimens of Armco/iron (0.014 % C), steel grades 20, 45 and U8 and cast iron grade SCh 21-40, aluminized at different temperatures and aged in a melt of pure aluminum or in an aluminum alloy with 4 % Si and 7 % Zn.

Cylindrical specimens 10 mm in diameter and 30 mm long were aluminized in small tanks of thin sheet iron 25 mm in diameter and 45 mm high which were immersed in a crucible containing the aluminum melt.

Specimens 18 mm in diameter and 70 mm long were aluminized directly in the crucible and then had the aluminum melt poured over them in a sand mold at a temperature of 720-730° C. From the bimetallic billets thus obtained sections and specimens for tensile testing were prepared.

Binary alloys were prepared in an electric arc crucibleless furnace with a protective (argon) atmosphere. Charge materials were Armco iron and AV00 grade aluminum.

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UDC: 669.15'71:621.18

L 39110-6

ACC NR: AP6030381

In the aluminizing of Armco iron in pure aluminum, the diffusion layer consisted of two zones: a thick zone of columnar crystallites adjoining the iron, and, considerably thicker, a fine crystalline zone (2-3 microns) adjoining the aluminum. The columnar crystallites grew predominantly in a direction perpendicular to the front of the reactive diffusion (toward the specimen surface) with the formation of characteristic protrusions -- tongues.

Formation of the two-phase layer is the result of reactive diffusion in the solid iron - aluminum melt system: the diffusion of aluminum atoms promotes the growth of columnar crystallites and the overall thickness of the layer, and in the straightforward diffusion of iron, atoms change in the condition of equilibrium of the system which leads to a decrease in layer thickness. From the thermodynamic point of view, this phenomenon boils down to an increase in entropy of displacement and decrease in the free energy of the system and, therefore, proceeds spontaneously and irreversibly.

The results of microstructural and chemical analyses were confirmed by roentgenographic investigation. Orig. art. has: 3 figures. [JPRS: 36,728]

SUB CODE: 11 / SUBM DATE: 13Apr65 / ORIG REF: 005 / OTH REF: 009

Card 2/2MLP

IOPATA, A.Ya., kandidat tekhnicheskikh nauk; MAN'KO, N.S., inzhener;
MOSENKIS, M.G., inzhener; KOSTENKO, G.F., redaktor; TRIASUNOVA,
P.G., redaktor; SERDYUK, V.K., inzhener, redaktor.

[The 1336M and 1336R turret lathes; directions for maintaining
and adjusting] Tekarno-revol'vernye stanki 1336M i 1336R; ruko-
vedstvo po obsluzhivaniyu i naladke. Izd.2-ee. Pod red. G.F.
Kostenko i P.G.Triasunova. Kiev, Gos.nauchno-tekhn.izd-vo mashi-
nostreit. lit-ry, 1956. 64 p. (MIRA 9:6)

1.Kiyevskiy zavod stankov-avtomatov.
(Lathes)

DUBINSKIY, L.M.; ZAMANSKIY, S.M.; LOPATA, A.Ya.; MAN'KO, N.S.; REZNIK, N.D.; SKARZHEVSKIY, R.A.; TERESHCHENKO, A.I.; KOSTENKO, G.F., red.; TARASINKEVICH, P.P., red.; KAPLINSKIY, L.A., red.; SOROKA, M.S., red.

[The multiple-spindle 1261M and 1262M automatic lathes and 1261P, and 1262P semiautomatic lathes; handbook on adjustment and servicing] Mnogospindel'nye tokarnye avtomaty 1261M, 1262M i poluavtomaty 12662P; rukovodstvo po naladke i obsluzhivaniyu. Izd.2. Pod red. G.F.Kostenko, P.P.Tarasinkevicha i L.A.Kaplinskogo. Moskva, Mashgiz, 1960. 170 p. (MIRA 15:11)
(Lathes--Maintenance and repair)

KOSTENKO, G. N.

35323.. Novaya Metodika Rascheta Vyparnykh Ustanovok. V SB:50 Let
Kievsk. Politekhn. In-Ta. Kiev, 1948, S. 369-80-Bibliogr:7 Nazv.

SO: Letopis'Zhurnal'nykh Statey, Vol. 34, Moskva, 1949

KICHIGIN, Mikhail Aleksandrovich; KOSTENKO, Georgiy Nikolayevich; NEDLIN,
M.N., redaktor; SKVORTSOV, I.M., tekhnicheskij redaktor

[Heat exchangers and evaporators] Teploobmennye apparaty i vyparnye
ustanovki. Moskva, Gos. energeticheskoe izd-vo, 1955. 392 p.

[Microfilm]

(MLRA 8:2)

(Heat exchangers)

(Evaporating appliances)

Mosten ko, B.N.

For nonsteady working steam jacks, coils, and other heat ex-
changers, a convenient method of evaluation is put forward by
using some nondimensional characteristic. To illustrate this an
example is given for the computation of the heat transfer coeffi-
cient, and the method is applied to the case of a steam jacket.

ADDENDUM, Georgiy Nikolayevich

24(18)

PHASE I BOOK EXPLOITATION

SOV/1483

Kostenko, Heorhiy Mykolayevych

Tekhnichna termodynamika (Technical Thermodynamics) Kyyiv, Derzh-
tekhvydav, 1958. 419 p. 1,000 copies printed

Ed.: A.I. Rudnyts'kyy, Candidate of Technical Sciences; Executive
Ed.: M. Dotsenko; Tech. Ed.: S. Matusevych

PURPOSE: This is a textbook approved by the Ministry of Higher
Education of the Ukranian SSR for students specializing in heat
engineering at engineering vtuzes

COVERAGE: This is a course in basic engineering thermodynamics,
excluding thermodynamics of refrigeration and chemical thermo-
dynamics. It deals with basic notions and laws of engineering
thermodynamics, thermodynamic properties of working media, study
of noncyclic thermodynamic processes, and standard cycles of heat
power plants. In the preface the author mentions the following
Ukrainian authors as having contributed to the field during 1915-
1928: M.O. Bykov, O.O. Satkevych, O.A. Brandt. He also mentions

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APPROVED FOR RELEASE: 06/14/2000

CIA-RDP86-00513R000825210011-1"

Technical Thermodynamics

SOV/1483

O.A. Hukhman, whose book was published in 1947. The author thanks
professor M.O. Kichihin (deceased) for constant assistance and
guidance in his work. There are 28 references, all of them Soviet.

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PART ONE. FUNDAMENTALS AND LAWS OF ENGINEERING THERMODYNAMICS

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Card 2/14

The principal equations of ...

S/143/62/000/004/003/006
D238/D307

ve industrial work in the flow indicate the work resources in a thermodynamic system taking in external heat flow under given temperature conditions, the change in the thermodynamic state of the working body and in addition, for industrial work, the change in kinetic energy of the working body. Special interest attaches to the possibility of obtaining expressions for power losses due to the irreversibility of actual processes. It is shown that systematic utilization of the general basic equations can aid in standardizing analysis results and in calculating thermodynamic processes.

ASSOCIATION: Odesskiy politekhnicheskii institut (Odessa Polytechnical Institute)

SUBMITTED: March 14, 1961

Card 2/2

KOSTENKO, G.N., prof.

Principal equations of engineering thermodynamics. Izv.vys.ucheb.
zav.; energ. 5 no.4:90-94 Ap '62. (MIRA 15:5)

1. Odesskiy politekhnicheskiy institut. Predstavlena kafedroy
teoreticheskoy i obshchey teplotekhniki.
(Thermodynamics)

KOSTENKO, G.N., kand. tekhn. nauk; GRABOVSKIY, A.M., kand. tekhn. nauk

Use of the international system of units in heat engineering
and hydraulic calculations. Teploenergetika 10 no.11:90-93
N '63. (MIRA 17:1)

KOSTENKO, G. N. (Odessa polytechnical institute)

"A generalized method of thermodynamic analysis of various processes on the basis of exergetic balances."

Report presented at the Section on Thermodynamics, Scientific Session, Council of Acad. Sci. Ukr SSR on High Temperature Physics, Kiev, 2-4 Apr 1963.

Reported in Teplofizika Vysokikh temperatur, No. 2, Sep-Oct 1963, p. 321, JPRS 24,651. 19 May 1964.

GRABOVSKIY, Aleksandr Markovich, kand. tekhn. nauk; KOSTENKO,
Georgiy Nikolayevich, prof., kand. tekhn. nauk;
CHEBOTAREV, V.A., kand. tekhn. nauk, retsenzent;

[Fundamentals of the use of the units of the International
System of Units in thermal and hydraulic calculations] Os-
novy primeneniia edinits SI v teplovykh i gidravlicheskiikh
raschetakh. Kiev, Tekhnika, 1965. 105 p.

(MIRA 18:3)

ANDREYEV, L.P., inzh.; KOSTENKO, G.N., prof.

Power characteristics of the efficiency of heat exchangers.
Izv.vys.ucheb.zav.; energ. 8 no.3:53-60 Mr '65.

(MIRA 18:4)

1. Odesskiy politekhnicheskiy institut. Predstavlena kafedroy
teoreticheskoy i obshchey teplotekhniki.

KOSTENKOV, G.P.

MIKHEYEV, M.N.; NEIZVESTNOV, B.M.; TURCHINSKIY, I.I.: KOSTENKOV, G.P.:
IZOTOVA, T.K.

Magnetic control of the depth of the case-hardened layer and the
hardness of mouldboards. Zav.lab. 23 no.2:208-211 '57.

(MIRA 10:3)

1. Ural'skiy filial Akademii nauk SSSR i Vysokogorskiy mekhanicheskiy
zavod.

(Magnetic measurements) (Cementation(Metallurgy))
(Flows)

Kostenko, G.S.

SOV/68-58-8-8/28

AUTHORS: Kostenko, G.S., Pashkevich, A.Z. and Longinov, B.A.

TITLE: A simplified Method of Measuring Temperatures Along the Axis of Coking Charge (Uproshchennyy metod zamera temperatur po osi koksovogo piroga)

PERIODICAL: Koks i Khimiya, 1958, Nr 8, pp 24 - 26 (USSR)

ABSTRACT: The proposed method consists of immersing into the coking charge, steel tubes closed at the immersing end by a conical steel stopper and open at the top end. The temperature is measured by sighting an optical pyrometer on the closed end and reading the temperature. The method was compared with the usual one (inserting thermocouples) and a satisfactory agreement was obtained. The tubes are immersed into the charge either immediately after charging or 6 hours before pushing. There are 4 tables.

ASSOCIATION: Dnepropetrovskiy koksokhimicheskiy zavod (Dnepropetrovsk Coke Oven Works)

Card 1/1 1. Coal--Processing 2. Temperature--Measurement
 3. Pyrometers--Applications